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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,757	08/25/2003	Jagannathan Seenu Srinivasan	NPE 2002-002	2733

7590 05/26/2005

James C. Valentine
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4350 Northern Pike
Monroeville, PA 15146

EXAMINER

PALABRICA, RICARDO J

ART UNIT	PAPER NUMBER
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3641

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,757

Applicant(s)

SRINIVASAN, JAGANNATHAN
SEENU

Examiner

Rick Palabrica

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant's 4/18/05 Amendment, which directly amends claims 1 and 3, and cancels claims 4, 6 and 7, is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan (U.S. 5,024,802) in view of the combination of Mandl et al. (Nuclear Engineering and Design 110 (1988) 55-59) and Hunt (U.S. 4,856,344). Srinivasan discloses the Applicant's claims except for adjustment of the high level set point to account for the Δp variation attributable to a structural component between the lower level and upper level taps of the steam generator.

The invention is defined in terms of Jepson claims. Therefore, the preamble of claim 1, which recites the upper level and lower level taps, the span between the taps, the structural component and the sensor means, including the connection of these means to the taps, are all prior art.

The claimed method controls water inventory by Δp measurements. Mandl et al. teach determination of water inventory in nuclear reactor pressure vessels, under two-phase flow conditions, by differential pressure cells. They further teach that the

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accuracy of said Δp measurements depends on the validity of the commonly made assumption that the acceleration and friction components are negligible compared to the hydrostatic head (see page 55, 3rd paragraph). This teaching implies that if the acceleration and friction components are not negligible, they should be accounted for in the measurements, i.e., some correction factors attributable to them must be factored into the measured Δp values.

Hunt teaches flow measurements in a pipe using differential pressure measurements with pressure transducers under two-phase conditions (see col. 1, lines 3+). He further teaches that the measured differential pressure must include corrections for slippage (velocity factor) and friction loss (see col. 2, lines 6+).

Note that Hunt provides an example of how to apply the teaching of Mandl et al. in cases where velocity and friction losses are not negligible and have to be accounted for in differential pressure measurements.

One having ordinary skill in the art would have recognized that all three references are in the same field of endeavor, i.e., measurement of pressure-related parameters under two-phase flow conditions. The steam generator water level in Srinivasan, the water inventory in the pressure vessel of Mandl et al. and the liquid flow in Hunt are all related to and affected by pressure in the system, and measured in terms differential pressure.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method, as disclosed by Srinivasan, by the teachings of Mandl et al. and Hunt, to account for Δp variation attributable to a

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structural component between the lower level and upper level taps of the steam generator, in place of the velocity head bias, to gain the advantages thereof (i.e., achieve more accurate control of feed water level where said Δp variation is more significant than the velocity head bias), because such modification is no more than the use of well known expedients within the nuclear art, and the substitution of one water level control method by another well known method.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B and C further illustrate prior art.

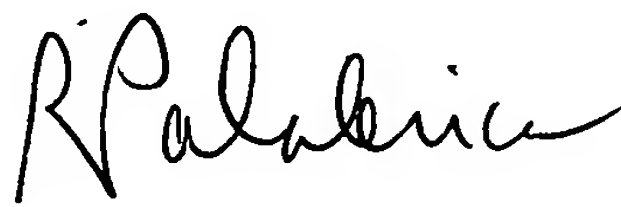
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:30-5:00, Mon-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJP
May 18, 2005

A handwritten signature in black ink, appearing to read "R. Palabrica". The signature is written in a cursive style with a large initial "R" and a long, sweeping underline.